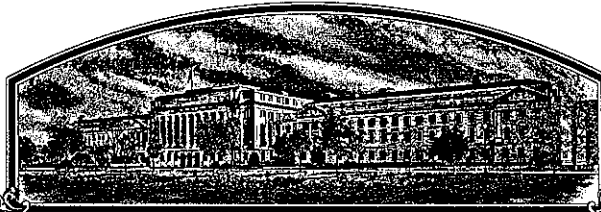


No.

8700079



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Asgrow Seed Company

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (U.S.C. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'A2234'



Attest:

Kenneth H. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

In Testimony Whereof, I have hereunto set
my hand and caused the seal of the Plant
Variety Protection Office to be affixed
at the City of Washington, D. C.
this 30th day of June in
the year of our Lord one thousand nine
hundred and eighty-seven.


Richard E. Lyng
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions on reverse)

1. NAME OF APPLICANT(S) Asgrow Seed Company		2. TEMPORARY DESIGNATION X2234	3. VARIETY NAME A2234
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) 9620-190-25 Gull Road, Building 190 Kalamazoo, Michigan 49001		5. PHONE (Include area code) 616-385-6605	FOR OFFICIAL USE ONLY VPVO NUMBER 8700079
6. GENUS AND SPECIES NAME Glycine max	7. FAMILY NAME (Botanical) Leguminosae		FILING DATE March 4, 1987 TIME <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M.
8. KIND NAME Soybean	9. DATE OF DETERMINATION September 1984		FEES RECEIVED AMOUNT FOR FILING \$ 1800.00 DATE February 24, 1987 AMOUNT FOR CERTIFICATE \$ 200.00 DATE June 8, 1987
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation			12. DATE OF INCORPORATION March 22, 1968
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware			
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS John A. Batcha 9620-190-25 Asgrow Seed Company Gull Road, Building 190 Kalamazoo, Michigan 49001 PHONE (Include area code):			
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.) b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement. c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety (Request form from Plant Variety Protection Office.) d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of Variety. e. <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership.			
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) <input type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input checked="" type="checkbox"/> No			
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> Yes <input type="checkbox"/> No		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input type="checkbox"/> Certified	
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? <input type="checkbox"/> Yes (If "Yes," give date) <input checked="" type="checkbox"/> No			
19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input checked="" type="checkbox"/> No			
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT 		DATE Feb 20, 1987	
SIGNATURE OF APPLICANT		DATE	

Asgrow Seed Company
PVP Application A2234 Soybean
January 1987

EXHIBIT A

ORIGIN AND BREEDING HISTORY OF A2234

Pedigree: (Calland/Amsoy//Century)³/Williams82

1982 The second backcross was made in 1982.

1982-83 BC₂ F₁ plants grown in a winter generation.

1983 BC₂ F₂ plants were grown at Redwood Falls, Minnesota, harvested in the fall and thrashed individually.

1984 Thirty BC₂ F₂ derived progeny rows were grown in the F₄ generation in 1 rep 4 row plot evaluations at Redwood Falls, Minnesota. In September 1984 progeny row A8234-2 was selected and harvested in bulk. Also, single plants with tawny pubescence, tan pods, and seed with black hila and dull seed coat were pulled and thrashed.

It was in September 1984 that A8234-2 was determined to be a stable and unique line.

1985 A8234-2 was entered into the 85 R152 yield test as entry 17, which was assigned the designation, X2234. Thirty-four pure rows were selected for uniformity to form breeder seed.

1985-86 Thirty-four pounds of breeder seed was increased in a winter nursery in Puerto Rico. Twenty units were harvested and returned to Perry, Iowa.

1986 X2234 was entered into the 86V150 yield test as entry 10 which was grown at thirteen locations in Minnesota, Wisconsin, Iowa, Illinois, and Ontario and entered into the 86V201 yield test as entry 08 which was grown at seventeen locations in Minnesota, Wisconsin, Iowa, Illinois, Indiana, Ohio, and Ontario.

Twenty-three acres of X2234 was grown at Perry, Iowa, and 1040 fifty-pound units of cleaned seed was produced (Lot APG3771A).

A subline test, 86M922 of BC₂ F₄ derived lines in the F₅ generation, was grown at Redwood Falls, Minnesota, and Ames, Iowa.

1986-87

Six uniform high yielding sublines were bulked to form 100 pounds of breeder seed and increased in a winter nursery in Puerto Rico.

X2234 was nominated for release and full production and assigned the designation A2234.

Yield trial evaluations in 1985 and 1986 and seed production in 1986 indicate that A2234 is uniform and stable. As with other soybean varieties, variants can occur for almost any characteristic during the course of repeated sexual production.

Asgrow Seed Company
PVP Application A2234 Soybean
January 1987

EXHIBIT B

NOVELTY STATEMENT CONCERNING A2234 SOYBEAN

To our knowledge the soybean varieties that most closely resemble A2234 are A2187, BSR101, Corsoy 79, A1937 and Elgin. Characteristics which differentiate, but are not necessarily restricted to the following:

1. Plant Pubescence Color:
 - A2234 = Tawny
 - A2187 = Gray
 - BSR101 = Gray
 - Corsoy 79 = Gray
 - A1937 = Tawny
 - Elgin = Tawny
2. Pod Color:
 - A2234 = Tan
 - A2187 = Brown
 - BSR101 = Tan
 - Corsoy 79 = Brown
 - A1937 = Brown
 - Elgin = Brown
3. Hilum Color:
 - A2234 = Black
 - A2187 = Yellow
 - BSR101 - Imperfect Black
 - Corsoy 79 = Yellow
 - A1937 = Buff
 - Elgin = Black
4. Reactions to Powdery Mildew
(Microspheera diffusa):
 - A2234 = Resistant
 - A2187 = Susceptible
 - BSR101 = Resistant
 - Corsoy 79 = Susceptible
 - A1937 = Susceptible
 - Elgin = Resistant

5. Reaction to Races of Phytophthora megasperma f. sp. glycinea:

	RACE										
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>13</u>	<u>17</u>	<u>21</u>
A2234	R	R	R	R	R	R	R	R	R	R	R
A2187	R	R	S	S	S	S	S	S	R	R	S
BSR101	R	R	S	S	S	S	S	S	R	R	S
Corsoy 79	R	R	R	S	S	R	R	R	R	R	R
Al937	R	R	S	S	S	S	S	S	R	R	S
Elgin	R	R	S	S	S	S	S	S	R	R	S

6. Seed Protein Peroxidase Activity:

A2234 = Low
A2187 = High
BSR101 = Low
Corsoy 79 = High
Al937 = Low

7. Lodging Score:

1 = erect
5 = prostrate

A2234 = 1.7
A2187 = 2.2
BSR101 = 2.1
Corsoy 79 = 3.6
Al937 = 2.2

LSD (.05) = 0.2

8. Height (cm):

A2234 = 91.4
A2187 = 102.6
BSR101 = 97.9
Corsoy 79 = 107.3
Al937 = 95.2

LSD (.05) = 2.2

A2234 is an early group II maturity variety that has higher potential yields than A2187, BSR101, Corsoy 79, Al937 or Elgin.

Height and lodging data is from the 1986 V150 Asgrow trials. Elgin was not in the 86V150 trials.

Asgrow Seed Company
PVP Application A2234 Soybean
January, 1987

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

FORM APPROVED: OMB NO. 0581-0055

EXHIBIT C
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Asgrow Seed Company	TEMPORARY DESIGNATION X2234	VARIETY NAME A2234
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) 9620-190-25 Gull Road, Building 190 Kalamazoo, Michigan 49001		FOR OFFICIAL USE ONLY PVPO NUMBER 8700079

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow

2 = Green

3 = Brown

4 = Black

5 = Other (Specify) _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton')

2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

★ 5. HILUM COLOR: (Mature Seed)

1 = Buff

2 = Yellow

3 = Brown

4 = Gray

5 = Imperfect Black

6 = Black

7 = Other (Specify) _____

★ 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow

2 = Green

★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low

2 = High

★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1^a)

2 = Type B (SP1^b)

★ 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')

2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')

3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')

4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ 10. LEAFLET SHAPE:

1 = Lanceolate

2 = Oval

3 = Ovate

4 = Other (Specify) _____

11. LEAFLET SIZE:

☐ 31 = Small ('Amsoy 71'; 'A5312')
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

12. LEAF COLOR:

☐ 31 = Light Green ('Weber'; 'York')
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

★ 13. FLOWER COLOR:

☐ 2

1 = White

2 = Purple

3 = White with purple throat

★ 14. POD COLOR:

☐ 1

1 = Tan

2 = Brown

3 = Black

★ 15. PLANT PUBESCENCE COLOR:

☐ 2

1 = Gray

2 = Brown (Tawny)

16. PLANT TYPES:

☐ 31 = Slender ('Essex'; 'Amsoy 71')
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

★ 17. PLANT HABIT:

☐ 3

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

★ 18. MATURITY GROUP:

☐ 0 ☐ 5

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

★ 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

★

☐ 0Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)

★

☐ 0Bacterial Blight (*Pseudomonas glycinea*)

★

☐ 0Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

★

☐ 0Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)

★

☐ 0

Race 1

☐

Race 2

☐

Race 3

☐

Race 4

☐

Race 5

☐

Other (Specify)

☐ 0Target Spot (*Corynespora cassicola*)☐ 0Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☐ 2Powdery Mildew (*Microsphaera diffusa*)

★

☐ 1Brown Stem Rot (*Cephalosporium gregatum*)☐ 0Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

- ★ ☐ 0 Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)
- ☐ 0 Purple Seed Stain (*Cercospora kikuchii*)
- ☐ 0 Rhizoctonia Root Rot (*Rhizoctonia solani*)
- Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
- ★ ☐ 2 Race 1 ☐ 2 Race 2 ☐ 2 Race 3 ☐ 2 Race 4 ☐ 2 Race 5 ☐ 0 Race 6 ☐ 2 Race 7
- ☐ 2 Race 8 ☐ 2 Race 9 ☐ 2 Other (Specify) Race 13, 17, 21

VIRAL DISEASES:

- ☐ 0 Bud Blight (Tobacco Ringspot Virus)
- ☐ 0 Yellow Mosaic (Bean Yellow Mosaic Virus)
- ★ ☐ 0 Cowpea Mosaic (Cowpea Chlorotic Virus)
- ☐ 0 Pod Mottle (Bean Pod Mottle Virus)
- ★ ☐ 0 Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

- Soybean Cyst Nematode (*Heterodera glycines*)
- ★ ☐ 1 Race 1 ☐ 1 Race 2 ☐ 1 Race 3 ☐ 1 Race 4 ☐ Other (Specify) _____
- ☐ 0 Lance Nematode (*Hoplolaimus Colombus*)
- ★ ☐ 0 Southern Root Knot Nematode (*Meloidogyne incognita*)
- ★ ☐ 0 Northern Root Knot Nematode (*Meloidogyne Hapla*)
- ☐ 0 Peanut Root Knot Nematode (*Meloidogyne arenaria*)
- ☐ 0 Reniform Nematode (*Rotylenchulus reniformis*)
- ☐ OTHER DISEASE NOT ON FORM (Specify): _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ★ ☐ 1 Iron Chlorosis on Calcareous Soil
- ☐ Other (Specify) _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ☐ 0 Mexican Bean Beetle (*Epilachna varivestis*)
- ☐ 0 Potato Leaf Hopper (*Empoasca fabae*)
- ☐ Other (Specify) _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	Elgin	Seed Coat Luster	A1937
Leaf Shape	A1937	Seed Size	Elgin
Leaf Color	Gnome	Seed Shape	A1937
Leaf Size	A1937	Seedling Pigmentation	A1937

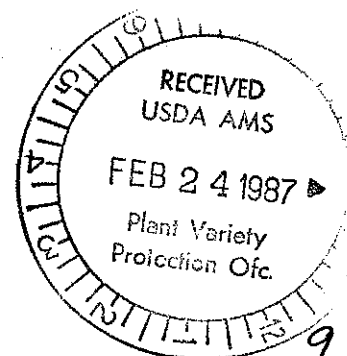
23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
Submitted A2234	129	1.5	90	7.5	14.4	40.2	19.8	17.3	2.8
A1937 Name of Similar Variety	126	2.1	94	7.8	13.0	39.8	19.7	16.1	2.8

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A₂ in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

Data from 1986 Asgrow Stage 4 Nomination, except for protein and oil from 1986 Ontario 3400 Heat Unit License Trials.



Asgrow Seed Company
PVP Application A2234 Soybean
January 1987

EXHIBIT D

Additional Description of the Variety

A2234 is an early Maturity Group II cultivar that possesses an outstanding combination of characters needed by producers in its maturity zone. It combines high yield potential, excellent standability, resistance to powdery mildew and resistance to many races of Phytophthora megasperma f. sp. glycinea because it carries the Rps₁ alleles. It, therefore, provides growers a superior alternative to many widely grown early group II cultivars.

EXHIBIT E

Statement of the Basis of Applicant's Ownership

A2234 was originated and developed Alan K. Walker, Asgrow Plant Breeder. By agreement between employee and Asgrow Seed Company, all rights to any invention, discovery, or development made by an employee are assigned to the Company. No rights to such invention, discovery, or development are retained by the employee.